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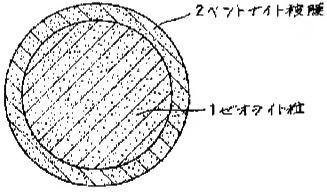
(54) [Title of the Invention] **Pet waste processing litter**

(57) [Abstract]
[Purpose] The purpose of the present invention is to satisfy all of the following characteristics: deodorization/odor-control, fluid-absorption/retention, portability/handling, and economy.

[Structure] Pet waste processing litter is fabricated, in which a Bentonite Coating Film 2 with a thickness of 0.5mm is formed on the surface of an antibiotic zeolite particle 1, with an area of approximately 600m^2/g and a diameter of 0.5 to 3.0mm, so that the diameter of the particle is from 1.5mm to 4.0mm. Its specific gravity is in a range from 0.65 to 0.7.

[Effects] As compared to bentonite, the particle is lighter in weight by approximately 27%, which enhances the handiness of the litter. In addition to the superior deodorization/odor-control and water-absorption/water-retention resulting from zeolite, the bentonite portion swells and quickly clumps; therefore, the litter is capable of controlling odor by sealing it within the clump. Furthermore, due to bentonite, superior handling and economy can also be ensured.



1: Zeolite Particle
2: Bentonite Coating Film

[Claims]

[Claim 1] Pet waste processing litter, in which the surface of the zeolite particle is coated by bentonite.

[Claim 2] Pet waste processing litter, in which methylene blue is impregnated in the pet waste processing litter of Claim 1.

[Claim 3] Pet waste processing litter, which is an aggregate between the pet waste processing litter of Claim 1 and the pet waste processing litter of Claim 2, mixed at the ratio of 7:3.

[Claim 4] Pet waste processing litter of any of Claims 1 to 3, in which the zeolite particle is an antimicrobial zeolite particle.

[Detailed Explanation of the Invention]

[0001]

[Industrial Field of Application] The present invention relates to pet waste processing litter which processes urine, etc. discharged by pets such as cats.

[0002]

[Prior Art] Traditionally, zeolite, bentonite, and paper-sand are used as pet waste processing litter. Among these, zeolite is capable of absorbing approximately 200% of its self-weight, and is superior relative to its deodorizing effectiveness because it absorbs ammonia ions. Bentonite does not possess the same level of deodorizing effectiveness as zeolite; however, bentonite clumps the portions with urine discharge; therefore, it has an advantage in terms of being easier to discard, and is more economical. Paper-sand is created by mixing zeolite and bentonite to pulp, and by then shaping and drying the mixture. In addition to the water-absorbing capabilities and deodorizing effects resulting from paper, paper-sand has an advantage in that it can be flushed down a drain, and that it can be disposed of as burnable garbage. Some types of paper-sand have hard-clumping effects, due to the polymer contained in it.

[0003]

[Problem that the Invention is to Solve] However, none of these traditional pet waste processing litter products satisfy all of the following characteristics: deodorization/odor-control, fluid-absorption/retention, portability/handling, and economy.

[0004] In other words, when zeolite is used by itself as a simple substance, although it satisfies characteristics relative to deodorization/odor-control and fluid-absorption/-retention, it is inferior in terms of handling and economy. When bentonite is used by itself as a simple substance, although it satisfies characteristics relative to handling and economy, it has not been able to fully satisfy performance requirements relative to deodorization/odor-control or water-absorption/-retention. Moreover, when paper-sand by itself as a simple substance, although superior in terms of handling, it has not able to satisfy performance requirements relative to deodorization/odor-control and fluid-absorption/ -retention, as well as cases in which zeolite and

bentonite are used respectively by itself as a simple substance.

[0005] The present invention was made in consideration of such existing problems, in order to provide pet waste processing litter to satisfy all of the following characteristics: deodorization/odor-control, fluid-absorption/retention, portability/handling, and economy.

[0006]

[Means for Solving the Problems] In the present invention, In order to solve the aforementioned problems, pet waste processing litter was structured by coating the surface of the zeolite particle with bentonite. In addition, methylene blue may be impregnated in such pet waste processing litter. When utilizing the pet waste processing litter in the present invention, it is more desirable to utilize a mixture between waste processing litter in which the surface of the zeolite particle is coated with bentonite, and waste processing litter in which methylene blue is impregnated, at a weight ratio of 7:3. Furthermore, it is desirable to utilize an antimicrobial zeolite particle for the zeolite particle.

[0007]

[Operation in the Invention] The pet waste processing litter in the present invention utilizes the zeolite particle, which has deodorizing capabilities that are five times stronger than activated carbon; therefore, it is superior in terms of its deodorizing capability. Because the surface of the zeolite particle is coated with bentonite, the bentonite portion swells and quickly clumps when urine is discharged; therefore, the odor is sealed and controlled, and its portability/handling is also enhanced. Furthermore, because the pet waste processing litter in the present invention consists of porous ceramics, it possesses fluid-absorbing/-retention capabilities which are 1.5 times higher than it's self-weight; therefore, it consumes less litter, and is consequently more economical.

[0008] Herein, an antimicrobial zeolite such as silver-substituted zeolite, in which sodium ions within the zeolite have been substituted with silver ions, possesses antimicrobial activity against various types of micro-organisms, such as bacteria, yeast, or molds. Therefore, when an antimicrobial substance is used as the zeolite particle, it becomes possible to control the generation and growth of various micro-organisms; especially when methylene blue is impregnated in the litter, its antimicrobial activity is further enhanced.

[0009]

[Working Example 1] The pet waste processing litter in the present invention is the one shown in Figure 1, in which a Bentonite Coating Film 2 with a thickness of 0.5mm is formed on the surface of an antibiotic zeolite particle 1, with an area of approximately $600m^2/g$ and a diameter of 0.5 to 3.0mm, so that the diameter of the particle is from 1.5mm to 4.0mm.

[0010] The specific gravity of the pet waste processing litter in the present invention is in a range from 0.65 to 0.7, which is lighter than bentonite (0.9 to 0.95) by 27%, which enhances the

handiness of the litter. When keeping a male cat while utilizing 500g of this pet waste processing litter, no odor was observed even after one week had elapsed, which means that the product's odor absorbing capabilities still remained. The portions where urine was discharged hard-clumped, which made discarding easier. Furthermore, when examining the presence of micro-organisms at the portions where urine was discharged, there was no such presence observed in almost all cases.

[0011] On the other hand, a similar test was conducted utilizing zeolite by itself as a simple substance; the results showed that the litter utilizing zeolite by itself as a simple substance started to produce odor by the fifth day, that it retained no odor absorbing capability, that it was difficult to discard after it had been used, and that the presence of micro-organisms was confirmed in large amounts at the portions where urine had been discharged. Furthermore, a similar test was conducted utilizing bentonite by itself as a simple substance; the results showed that the litter utilizing bentonite by itself as a simple substance started to produce an odor by the third day, and that the presence of micro-organisms was confirmed in large amounts at the portions where urine had been discharged.

[0012]

[Working Example 2] In this working example, methylene blue was impregnated within the pet waste processing litter of the aforementioned Working Example 1.

[0013] A test similar to the one stated above was conducted utilizing the pet waste processing litter of this working example; the results showed that, although the pet waste processing litter of this working example was slightly inferior in terms of fluid-absorption/-retention as compared to the pet waste processing litter of Working Example 1, the pet waste processing litter of this working example exhibited almost the same level of effectiveness as the pet waste processing litter of Working Example 1. In particular, the presence of micro-organisms was not observed at all. It is understood that this was achieved through the enhancement of antimicrobial activity, due to the antimicrobial zeolite particle and methylene blue impregnation.

[0014]

[Working Example 3] The pet waste processing litter of Working Example 1 and that of Working Example 2 were mixed at a weight ratio of 7:3. A similar test to the one stated above was also conducted utilizing the pet waste processing litter of this working example; highly superior results were obtained in all of the following characteristics: deodorization/odor-control, fluid-absorption/retention, portability/handling, and economy. The reason for this is that the pet waste processing litter of this working example obtained, through the pet waste processing litter of Working Example 1, superior capabilities relative to deodorization/odor-control and fluid-absorption/ -retention, which are especially important for pet waste processing litter; and it also obtained superior antimicrobial activity with the pet waste processing litter of Working

Example 2.

[0015]

[Working Example 4] Pet waste processing litter was structured in the same manner as Working Example 1, without utilizing any antimicrobial substances as the zeolite particle.

[0016] A similar test as the one stated above was conducted utilizing the pet waste processing litter of this working example; the results showed that, although the pet waste processing litter of this working example did not exhibit antimicrobial activity, the same effects as observed in Working Example 1 were obtained.

[0017] Furthermore, the manner in which the particle diameter and the thickness of the bentonite coating film may be designed is not limited to the manner stated in the above-stated working examples, and may be modified for optimization depending on the type and the sex of the pets which are being kept.

[0018]

[Effects of the Invention] As explained above, according to the pet waste processing litter in the present invention, because the surface of the zeolite particle is coated with bentonite, superior deodorization/odor-control and fluid-absorption/-retention capabilities resulting from the zeolite were obtained. In addition, because the bentonite portion swells and quickly clumps when urine is discharged, odor is sealed and controlled, which also enhances the handiness of the litter. Moreover, due to the use of bentonite, handling and economy are also achieved. Therefore, the pet waste processing litter in question can satisfy all of the following characteristics: deodorization/odor-control, fluid-absorption/retention, portability/handling, and economy. In addition, when an antimicrobial zeolite particle is utilized as the zeolite particle, it becomes possible to control the generation and growth of various micro-organisms; in particular, when methylene blue is impregnated within the litter, its antimicrobial activity is further enhanced.

[Brief Explanation of the Drawings]

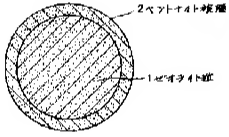
[Figure 1] Figure 1 is a vertical cross-sectional view of the pet waste processing litter in Working Example 1 of the present invention.

[Explanation of the Reference Numerals]

1: Zeolite Particle

2: Bentonite Coating Film

[Figure 1]



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